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ARI HOSTS INFANTRY SITUATION AWARENESS WORKSHOP

Clearly, situational awareness has overriding combat aspects. It's decisive when used properly . . . it isn't a modest enhancement, it's a decisive enhancement!

GEN (R) Edwin Burba, 29 SEP 98

This comment by General Burba, a keynote speaker at the Infantry Situation Awareness Workshop, set the tone for a gathering of over 80 military and civilian experts designed to critically examine the role of situation awareness (SA) in combat success as the Army plans for the Army of the future. The workshop was hosted on 29-30 September by the Army Research Institute's Infantry Forces Research Unit, at Fort Benning, Georgia.

WHAT IS SA?

Situation awareness is defined as "the ability to have accurate real-time information of friendly, neutral, and non-combatant locations; a common relevant picture of the battlefield scaled to specific levels of interest and needs." (TRADOC Pam 525-5, Force XXI Operations.) For the Army, this translates into "where I am, where my buddies are, and where the enemy is." In addition, the workshop addressed SA in the

way currently being forwarded by the Commanding General, 4th Infantry Division, the Army's first Digital Division. Situation awareness is not seen as an end-state, but as the foundation for situational understanding and situational dominance. That is:

Situation Awareness ⇄

Situation Understanding ⇄

Situation Dominance

As the Army modernizes its forces, bringing digitization and automation from the individual combatant to global command and control systems, the importance of SA becomes critical. The purpose of the workshop was to identify and clarify issues pertinent to SA needs in the Army, and in particular the Infantry. The objective involved developing SA requirements for Infantry combatants and teams, and focused on fundamental questions about leadership and decision-making.

(Cont'd. p.3)



Gen (R) Wayne Downing discusses SA with workshop participant.

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Dr. Edgar M. Johnson
Director

Director's Message

Army leaders and commanders at all levels continue to need our research and technical assistance. Now, more than ever before, they need the knowledge of the human dimensions that allow them to better understand the linkages between command processes and soldiers, to more effectively lead their units to increased levels of performance. By capturing the insights and understandings of soldiers, we play a vital role, and provide leaders and commanders one of the keys to the efficient deployment of modern, leaner, more lethal and better trained forces.

As we continue our research, we employ the tools of science and technology to provide validated findings and insights to senior leaders and policy makers for their use in decision making. Recent findings in the area of Situational Awareness exemplify the application of valuable knowledge gained from current research. Reactions learned from a structured sequence of experience and events builds the skills and confidence to significantly enhance performance. Additionally, the article on "the military decision making process" focuses attention on factors directly concerned with effective performance.

Recruitment, another issue, is related to soldier aptitudes. Presently, there is a shift in the perspective on soldier aptitudes as a vital link in the recruitment and selection process. The change in demographics, as a concern, will mean fewer enlistment age candidates. While parents' influence in the decision process is considered, the real message may be more direct.

Finally, the World Wide Web continues to grow as a means for both collection and dissemination of information. It has greatly increased the access to current, emerging knowledge and products. Take advantage of this rapidly evolving resource - visit the ARI Web site often and utilize it to the fullest extent possible. See you there!

A handwritten signature in cursive script that reads "Edgar M. Johnson".

(Cont'd. from p.1)

KEYNOTE SPEAKERS

The workshop featured three keynote speakers: GEN (R) Edwin Burba, GEN (R) Wayne Downing, and MG (R) Bert Maggart. These senior leaders, with over 90 years of Army experience among them, shared their insights about SA and combat success. Their comments emphasized training, leadership, and most of all the needs of the individual soldier. Observations by the keynote speakers included:

- SA requirements for individual combatants and squads - GEN (R) Bill Richardson and Dr. Mica Endsley;
- SA requirements for platoons, companies and battalions - LTG (R) Don Holder and Dr. Valerie Gawron;
- SA requirements for Infantry brigades - LTG (R) Rick Brown and Dr. Dick Pew;
- SA requirements for future Infantry teams - GEN (R) Paul Gorman and Dr. Daniel Serfaty.



- Successful commanders must understand and be proficient with the cognitive skills associated with vision, innovation, imagination, creativity, and inductive reasoning. We must find better ways to develop these leader skills.
- To enhance SA, the Army must find a way to stabilize its staffs. It should consider adopting the regimental system, whereby soldiers and leaders would spend most of their careers training and working in the same unit.
- The greatest impact on enhanced SA in recent Army experiments came from the Joint Surveillance Target Attack Radar System (JSTARS) and Unmanned Aerial Vehicles (UAVs). The Army has, however, barely scratched the surface in exploiting these and similar technologies.
- Despite what certain technologists and futurists may predict about future warfare, there will always be a close fight.

WORKING GROUPS

The crux of the workshop was four working groups, which were co-led by retired general officers and established SA researchers. These groups were:



Members of a working group grapple with vital SA issues.

Each working group was comprised of approximately 20 knowledgeable military and civilian personnel. These included participants from recent and ongoing Army experiments, including the Rapid Force Projection Initiative (RFPI), Task Force XXI, the Military Operations in Urban Terrain (MOUT) Advanced Concept Technology Demonstration (ACTD), and Land Warrior. The groups also included leaders from the Joint Readiness Training Center, 75th Ranger Regiment, 82nd Airborne Division, the Infantry Center and School, as well as scientists from Army laboratories and other services. The working groups each addressed five basic issues.

1. What are the most critical Infantry SA requirements? How are these linked to combat effectiveness and operational readiness?

A key issue raised was how light SA requirements differed from heavy SA requirements and the extent to which the light force may leverage technology and lessons learned from the heavy force. A specific SA requirement identified was an integrated command, control, communications, and intelligence system

capable of transmitting and receiving vital information such as location of enemy and friendly forces, calls for fire, reports, orders, and digital maps. This system must communicate information up and down two echelons, and must be designed to work in night and limited visibility operations, and in restricted and urban terrain.

2. What new training techniques and approaches are needed?

The Army must develop and/or modify training environments to specifically train situational dominance. New training methods are needed to train and sustain individuals, teams, and staffs for digital battlefield tasks. Soldiers and leaders must be trained in the basics, as well as in how to use the technology-based SA systems. Soldiers must, for example, be able to navigate with a map and compass as well as with a global positioning system (GPS). The training goal should not be task proficiency, but "hyper-proficient" individuals and teams who can fully exploit available SA technologies.

3. What pitfalls should the Army try to avoid in its drive to enhance SA?

There was clear agreement that leaders and soldiers must learn to avoid over-reliance on SA system support. Also, leaders must be specifically trained how to use the new SA information to make better decisions. They must avoid deferring decisions until they have "perfect" SA. Other threats include: information overload and its resultant fatigue, over-control of subordinates, vulnerability to countermeasures, unequal/incompatible technology among coalition forces, and failure to adapt organizational structure to new doctrine and procedures.

4. How can we assess SA in Infantry soldiers and teams?

Transferring existing measurement models and procedures to Infantry applications was a significant focus of these discussions. Moreover, due to the nature of Infantry warfighting, there was an emphasis on team measures of SA. In addition, the groups discussed how process indices, direct measurement of SA, measures of decision-making, and performance measures can be combined to obtain a complete picture of SA. Other SA measurement issues/approaches discussed included: capturing the interrelationships among performance,

workload, SA, and soldier acceptance; assessing/maximizing unit effectiveness when attached units have diverse technologies; comparing ground truth maps to separate staff solutions; assessing proactive information seeking; and a concern for shifting baselines as technology changes.

5. What are the most critical Training, Leader Development, and Soldier SA research issues that the Army should address in the next five years?

The overarching issues are ways to develop and train leaders and soldiers to take full advantage of emerging SA systems. Training issues included identification of optimal training methods, establishment of hyper-proficiency in SA, sustainment of established proficiency, and training and maintaining team SA. Other key issues that emerged included what resolution of information should be available at different echelons of command, and what are the optimal ways of displaying SA information.

The Proceedings from the workshop may be found on the ARI Website (www-ari.army.mil), and a hard copy of the Proceedings will be available soon.

For additional information, contact Dr. Scott E. Graham, ARI-Infantry Forces Research Unit, DSN 835-2362 or Commercial (706) 545-2362. Grahams@benning.army.mil.

Some Guidelines for Developing Effective Multimedia Training: Lessons Learned from the WARNET Pilot Initiative

ARI's assistance was requested to identify and select an appropriate instructional model to guide course development.

Background

In December 1995 the TRADOC Deputy Chief of Staff for Training selected the U.S. Army Infantry School (USAIS) at Fort Benning, Georgia as the lead agency for implementing the WARNET Pilot initiative, the training component for Force XXI.

The role of the WARNET Pilot was to synchronize the development and delivery of new technologies in training, and to use distance learning and information technologies to pilot the delivery of high quality, standardized training to soldiers and units where and when they need it.

ARI's Involvement with the WARNET Pilot Team

The Army Research Institute (ARI) - Infantry Forces Research Unit was contacted by the Special Assistant to the Commanding General, Army National Guard, to provide technical assistance for the WARNET Pilot course development effort.

Factors for the course development included: Identify and select an appropriate instructional model to guide course development; develop an evaluation plan to compare the effectiveness of the course versus traditional methods of instruction; review new course structure and format to ensure course developers adhered to the major tenets of the instructional model; assist in course evaluation; compute all statistical analyses; and deliver feedback from the evaluation.

WARNET Pilot Approach to Course Development

An overriding objective of the WARNET Pilot initiative was to phase out separate active component (AC) and reserve component (RC) courseware and develop a unified curriculum that would permit seamless training of AC and RC soldiers. To insure

seamless training, various 'state of the art technologies' had to be incorporated in the new courseware to include computer-based instruction (CBI) and compact disk read-only memory (CD-ROM). These technologies provide the flexibility to accommodate both AC and RC training needs, scheduling demands, and logistics issues.

The WARNET pilot approach to course development involved, in part, the identification of selected Infantry courses for reconfiguration; development of a prototype course; courseware evaluation, testing, and refinement. The Tactics Certification Course (TCC) was selected as the prototype course for conversion because it is a prerequisite for all Officer Candidate School and Career Management Field 11 course instructors.

TCC: Resident Course Organization

The TCC was originally developed in a small group instructional format, emphasizing extensive interchange between the instructor and from six to eleven students. As the course evolved it became primarily a lecture-based course with limited interaction between the instructor and the students. Content areas included Army operations, operational symbols, troop leading procedures, offensive operations, defensive operations, and a brief overview on engineer and fire support operations.

TCC: Reconfigured Course Structure and Organization

Based on subject matter expert and course developer feedback, virtually all content presented in the lectures was reconfigured for presentation on five CDs. Each CD represented a module consisting of specific lessons. Module content and organization was similar to the resident course, i.e., Army operations, troop leading procedures, offensive and defensive operations, and fire support and engineer operations. In pilot runs of the new CBI version of the TCC, students receive the five CDs and are given a schedule for completing each. After each CD is finished, a question and answer (Q&A) session is conducted between an instructor and the students focusing on key points in the material which the student must know to successfully complete a

training exercise without troops (TEWT). This can be done remotely, through video networking or on-site depending on the availability of trained instructors.

Lesson organization followed a fairly consistent format across modules. Examples of the screen design and overall organization for major lesson sections are shown for the Principles of War lesson .

Once all CDs have been completed and the student successfully passes a multiple-choice exam on the lesson content, the students move on to the TEWT, which is the last phase of the TCC and lasts approximately two days in residence.

Lessons Learned

The focus of this article is not so much on the evaluation of the TCC itself, as it is on the lessons learned throughout the entire formative evaluation process. It is hoped that some of the insights attained will be useful to readers engaged in the development of computer-based instructional courseware.

Have a model. Course developers had a specific objective – an approach that ensured learning and high levels of retention. To meet the objective, ARI developed an individualized system of instruction loosely derived from Keller's (1968) Personalized System of Instruction. The key tenants of the system included: presentation of relatively small chunks of information; frequent assessments on the material presented; immediate feedback; complete mastery of key lesson material; and active involvement by the student through completion of the self-assessment items.

These tenets served as guidelines for shaping the format of each lesson. Regardless of the instructional approach taken, course developers need to adapt an approach best suited for accomplishing their objectives and ensure that it is applied consistently throughout the course of instruction.

Selecting the appropriate media for presenting course content. An analysis of the TCC showed that not all portions of the course were amenable to CD-ROM/CBI. A large part of the lectures consisted primarily of facts, terms, operational symbols, and procedures; these were ideal candidates for computer-based instruction because repetition and drill are critical for mastery of content. In sum, course objectives and

content must be thoroughly analyzed to ensure that the appropriate media is selected for optimal instruction.

Identify objectives. Course or lesson objectives should drive the content. A review of early course modules showed, in some instances, no connection between the self-assessment questions at the end of the lesson and the course material. Once objectives are determined, then assessment items should be developed. These items should relate directly to the objectives. Only after these two steps are completed should the content be developed. This will ensure that unnecessary information is not included in the lesson.

Consistency and clarity. Course developers must strive to ensure a certain level of consistency is maintained across lessons. For example, text color, the location of navigation buttons, and procedures for moving through lessons should not vary. Also, information on the location and functions of the navigation and special feature (glossary) buttons should be provided to first time users upon logging in.

Active involvement between course developer and user. Course developers must involve the user in the course development process as early as possible. This will assure that glaring problems (to the user) are caught early and not repeated across lesson modules and ensures greater user acceptance of courseware.

Once draft versions of a lesson module have been completed and course developers have reviewed the module content for completeness and accuracy, the draft module must be administered to a sample representative of the target population of users. User feedback is critical to assess if individuals understand the instructional material and the explanations/examples presented, as well as to assess if course objectives are clear.

Observers should take note of areas of instruction in which students have difficulty navigating or continue to return because information is unclear. Students' comments on specific lessons are also important. Being sensitive to problems and comments will allow for accommodating both users' needs and learning objectives.

But was the instruction effective? A CBI module can be aesthetically appealing and equipped with the latest multimedia features, but in the final analysis, the student must be efficiently taught using the instructional approach presented in the module. The next step in the evaluation process is to determine if the selected instructional

approach results in superior or at least comparable performance when compared to existing modes of instruction.

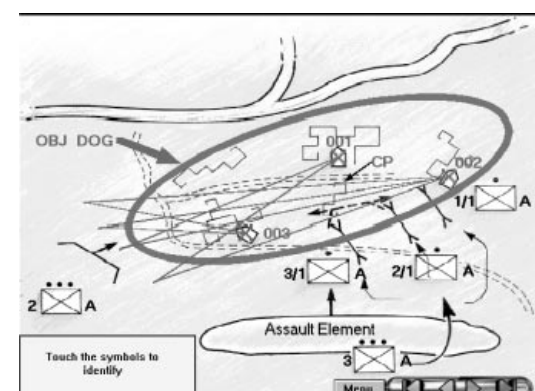
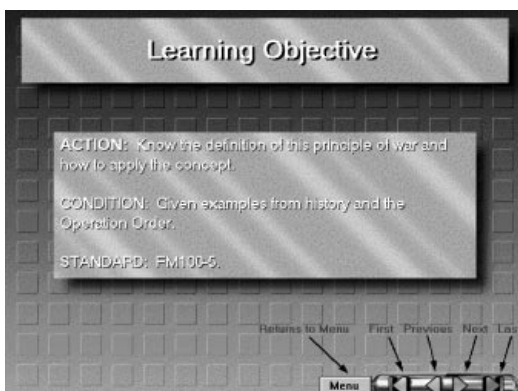
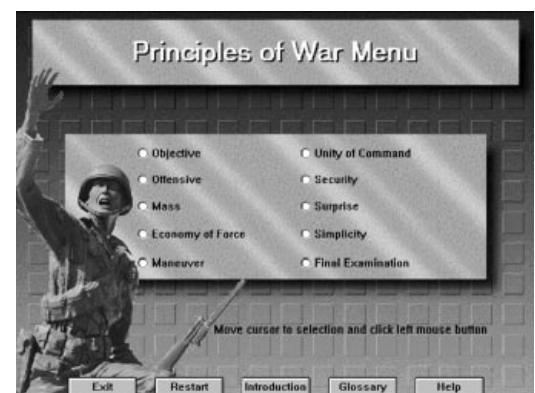
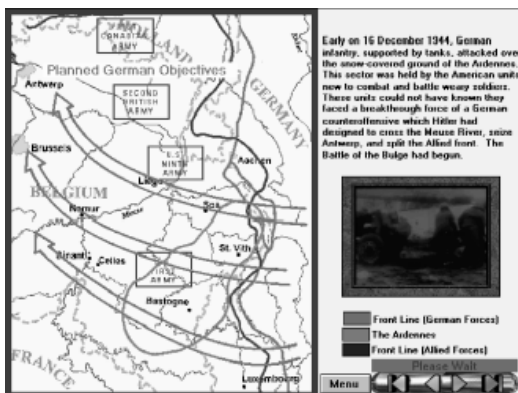
Conclusion

The goal of instructional design is to develop instruction from which the majority of students can learn. To achieve this objective requires a systematic process of translating principles of learning and instruction into plans for instructional materials and activities. This is especially critical when the medium of instruction is something other than a teacher, since any oversight made in the design of these instructional

materials cannot be easily remedied in a cost effective manner.

The lessons learned from our experience in the development and evaluation of the TCC will hopefully contribute to the development of a sound fundamental framework for course developers who are interested in constructing multimedia CBI courseware which is both acceptable to the user and which efficiently achieves instructional objectives.

For additional information, contact Dr. Robert Pleban, ARI-Infantry Forces Research Unit, DSN 835-1360 or Commercial (706) 545-5589. PlebanR@benning.army.mil.



The Military Decision-Making Process: Tactics, Techniques and Procedures in a Prototype Training Product

"Attention in the TOC! Division has just requested the command group attend an orders briefing at 1800 hours. The S3 says that it looks like we're going to conduct a deliberate attack within the next 72 hours."

You are the Executive Officer, or the Chief of Staff, or you are the Operations Officer. Your brigade commander returns from division headquarters with the warning order to begin a deliberate attack in 72 hours. He tasks you to initiate the military decision-making process to develop an operation order for this specific mission. What's next? What has to happen to be ready for the attack only 72 hours away? What should have already happened? Knowing what to do and how to do it is easier said than done.

What is the Military Decision-Making Process?

The Military Decision-Making Process (MDMP) is an analytic approach to decision-making that helps the commander and staff examine the battlefield and make decisions based on Mission, Enemy, Terrain, Troops and Time Available (METT-T), doctrine and logic. The MDMP consists of a single model, seven-step process that provides the thought process and structure for what can be a highly complex operation and set of activities. It involves the commander, his staff officers, staff NCOs, and administrative personnel. The full MDMP is detailed, deliberate, and time consuming. It is intricate and often perplexing. It can also be intimidating, especially in a time-constrained environment.

The seven steps of the MDMP are detailed in the 1997 FM 101-5, Staff Organization and Operations. The steps take the staff from receipt of the mission, mission analysis, course of action development, analysis, comparison and approval through final orders production. Military personnel study the overall process in various professional development courses, and can read about the MDMP in the FM. They can (and do) learn through experience. Generally however, it is as difficult to synchronize the individual's preparation for using the MDMP as it is to synchronize the battle itself. Too often instruction on or practice with the MDMP is too little – or worse, too late.

The Problem and a Prototype Solution

Research conducted by the Army Research Institute (ARI) has documented that officer training for staff positions is either lacking altogether or occurs after the individual has already been in the position for which he needed the training. Staffs are typically not together for a long enough period of time to be able to develop and practice good standing operating procedures to facilitate planning and decision-making. Experiments at the Combat Training Centers (CTCs) showed that units may know what to do in the MDMP, but don't really know how to go about doing it.

To alleviate some of these problems ARI initiated a research program to develop a standardized training product to train staff members on the "how-to" of military decision-making. It is based on doctrine and supplemented by analysis of the tasks required in the process. Helpful tactics, techniques and procedures (TTPs) were gleaned from Center for Army Lessons Learned materials, and from the insights and experiences of units who learned the hard way.

Distance Learning/Computer-Based Instruction

Several new and successful training programs have capitalized on the standardization, efficiency and convenience made possible by the use of computer-based instruction (CBI). The computer is also at the heart of increasing efforts to provide training at a distance to widespread populations at different locations. Distance learning permits each student the flexibility to move at his own pace and study at his own convenience. The MDMP product was designed to capitalize on this format. All software required to run the MDMP program is totally incorporated on one compact disc (CD).



Target Audience

The target audience for the original MDMP product was the Joint Readiness Training Center (JRTC), the CTC with primary focus on light Infantry units. More specifically, the initial test bed for the product, and the overall sponsor, was the JRTC Leaders Training Program (LTP). A unit's senior leaders and key staff participate in the LTP several months prior to their CTC rotation. Over a six to seven day period, the unit leadership (brigade, battalion, and attached CS officers and non-commissioned officers) plans and executes a series of planning operations, utilizing the MDMP, TTPs and other time saving techniques as appropriate. LTP coaches and cadre critique the overall performance, and provide assistance to inexperienced personnel to enable them to more successfully execute the overall mission planning, and their individual portion of it. They assist the staff in understanding the intricacies of, for example, the synchronization matrix, or help the S2 (Intelligence) officer understand how his information impacts on the scheme of maneuver.

"Attention in the TOC! Task Force Hawk has reported heavy contact on the high ground south of Objective ROOSTER. Estimated enemy reinforced company with armored vehicle support. Casualties light at this point. Aviation, give me a recommendation on diverting attack aircraft to TF Hawk. ALO, what is the status on immediate air support? ADO, give me your best guess on enemy ADA threat. TOP [TOC shift NCO], have your RTOs alert the other task forces. The commander has been notified. More to follow."

CTC experience shows that common unit problems occur when the brigade has a very thorough planning SOP, which is so voluminous – or new - that few have taken the time to study it. Each staff section seems to act independently. Frequently, Combat Support unit

leaders (Air Defense Artillery (ADA), Military Police, Engineer, etc.) are relatively inexperienced. They know their own unit capabilities, but they have not participated with the Infantry Brigade in a CTC rotation and do not realize their role in the brigade MDMP. FM 101-5 provides doctrine, but few examples of how to implement the process. These factors frequently combine to produce less than optimum performance.

The JRTC MDMP Product

The end product of this research program was a prototype individualized training package to prepare officers to conduct the MDMP.

This MDMP training product was especially designed for distribution to light infantry units prior to their JRTC training events. Materials are provided to units while they are at home station, for study prior to their participation in the LTP. During LTP, commanders and staffs perform practical exercises using the MDMP; enhanced home station training should improve their performance while at the JRTC.



The MDMP product can be used to ensure that the entire brigade staff is trained in standardized procedures. The course is doctrinally based, yet provides TTPs to assist individual personnel in the performance of their responsibilities. It also presents the integration requirements of the MDMP.

The JRTC course has seven lessons to match the MDMP steps, with TTPs for 19 selected positions. There is no text-based material, although reference is made to FM 101-5, Staff Organization and Operations (DA, 1997). Each step is a separate lesson; the lessons can be taken in any sequence. At the conclusion of each lesson are additional TTPs directed at each of the specific brigade positions. These TTPs are intended to

provide lessons learned and helpful tips to assist the individual to become more proficient in executing that step of the MDMP.

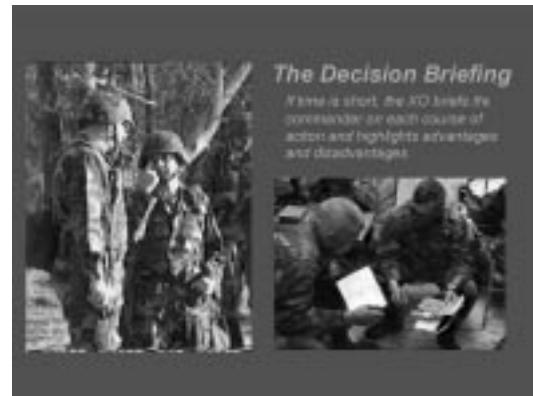
TTPs are included for the brigade commander, Executive Officer (XO), S1 (personnel), S2 (intelligence), S3 (operations), and S4 (Logistics), the Fire Support Officer (FSO) and the Aviation Commander (AVN CDR). Additional TTPs are available for brigade level Combat Support officers: the engineer (ENGR), aviation liaison officer (ALO), air defense officer (ADO), chemical officer (CHEMO), military police (MP) platoon leader, military intelligence company commander (MICO), air and naval gunfire liaison company officer (ANGLICO), special operations command and control element (SOCCE), civil affairs (CA) officer, psychological operations officer (PSYOP), and signal officer (SIGO). A sample TTP selection menu is shown at Figure 3.

The number of TTPs in any lesson varies according to the individual position and the specific step in the MDMP. TTPs offered a unique challenge. By their nature, they encompass a broad base of information. Some are focused directly at a particular officer or staff section; others provide the integration link for various officers, brigade sections, or even units. Whenever possible, TTPs were placed into the flow of the MDMP lesson. The remainder were grouped by lesson and highlighted for the attention of the appropriate person.

The Main Menu slide is at Figure 4. To facilitate learning, all lessons are structured in a similar manner. Each lesson corresponds to an MDMP step and each contains a doctrinal overview based on the May 1997 version of FM 101-5. This includes the identification of the products that should be developed or refined during that step. The doctrinal material provides a foundation for conduct of decision-making when the available time and situation permit thorough planning. It is important to train on the full and complete MDMP so each staff member can better understand how his participation interfaces with and impacts on the rest of the brigade staff. With this design, each officer can see not only his own functions, but also how he fits into the overall process. He also gains specific information tailored to his own responsibilities.

The MDMP course of instruction can be used for review or to train new staff members. Since those studying the MDMP possess varying levels of expertise,

flexibility in working through the course materials is a key element and lessons can be studied in any sequence desired. An individual who has already mastered selected portions need only study the lessons where improvement is needed or desired. Someone wanting refresher training on a designated portion of the MDMP can proceed directly to that lesson. Since the course



was designed only for information and not as certification or prerequisite for another course, no attempt was made to include testing modules or a training management system. If used in a unit or at the LTP, the practical exercise of applying the MDMP becomes the test. Command emphasis ensures full participation.

Initial phases of your attack were extremely successful, but units on your flank were not as fortunate. Your brigade has been told to assume a hasty defense and be prepared to attack into the flank of the enemy in an adjacent sector within 12 hours. This will require extremely quick planning, preparation, and execution in order to hit the enemy while he is still vulnerable. With only 12 hours until execution, how can you save some time?

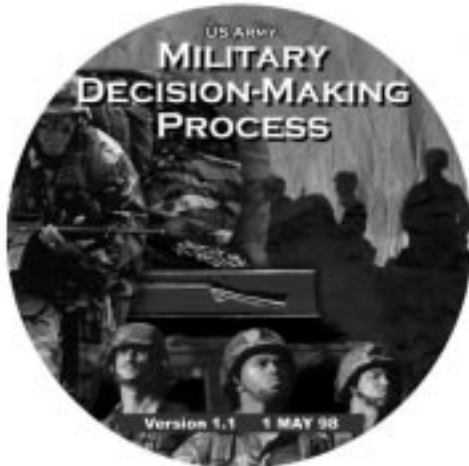
Frequently, the MDMP must be conducted in a time-constrained environment. At the heart of the single model process is that the MDMP is "abbreviated" during a time-constrained environment, when planning time is short. The MDMP planning is time consuming, but TTPs can help the unit accelerate the process during a time-constrained situation. Integrated into the doctrinal presentation and throughout the course material are tips on how to execute the steps in a time-constrained environment. The instructional material emphasizes that all seven steps must be accomplished, but offers suggestions to conserve time. These suggestions were gleaned from various sources and are

useful knowledge for anyone. By studying the doctrinal information, commanders and staffs will better understand the implications of compressing the process or attempting to conduct the MDMP without full participation of the entire staff.

"The engineers with the recon elements from Task Force Eagle have reported several extensive minefields in the AO where we are planning the deliberate attack. I've posted the locations on the SIGEVENT [significant events] board. What is the impact on our current courses of action?"

Doctrine states that war gaming is a critical portion of course of action analysis. FM 101-5 provides some sample forms that can be used to record the results. The MDMP explains exactly how a unit should complete the forms and also contains numerous sample forms that can be used to facilitate a variety of events and activities. The MDMP materials describe course of action development and analysis in detail; they also show how a SIGEVENT board might be used. Examples were collected from different units who have used them during training at the JRTC.

"Division is sending an OPORD over by runner. Looks like we're the division reserve. The 'Old Man' wants us to review the order and develop branches and sequels for possible contact."



A change to the mission need not mean starting all over. A well-trained staff can look at the original order and mission analysis, and plan new courses of action. The products created during the full MDMP can and should be used during subsequent planning sessions when time may not be available for a thorough relook, but where existing factors have not changed substantially.

Future Directions

The MDMP CBI course, as designed for the JRTC's LTP, is being reproduced and distributed for use by light infantry brigades and battalions in training. Although the material was designed specifically for Infantry, it could easily be adapted for heavy forces by modifying the existing JRTC scenarios and exercises and replacing them with scenarios, samples and exercises based on the terrain at the National Training Center. Other uses are immediately apparent. As a teaching tool for the any of the Officer Advance Courses, it would provide structure and reinforcement of material covered elsewhere. It can be used at the staff colleges, by the National Guard, or in any areas where a standardized training package is needed.

While the content of the training materials has been reviewed and approved, formal assessment of course impact on proficiency is ongoing. Evaluations will address the value of these products in preparing staff officers and commanders, and the overall utility of CBI material as a means to train military audiences for processes requiring individual proficiency and staff integration prior to collective participation. In order to leverage the benefits of these programs, training for processes that interrelate with the MDMP, such as the intelligence preparation of the battlefield and targeting, might be developed. Training deficiencies observed at the CTCs might also be considered as follow-on subjects.

For additional information, contact Marnie Salter, ARI-Infantry Forces Research Unit, DSN 835-2485 or Commercial (706) 545-2485. SalterM@benning.army.mil

What Role Do Parents Play In Enlistment Decisions?

Like Parent Like Child?!

Conventional wisdom and most historical perspectives underscore the importance of parental guidance and opinions on a child's career choice. However, the impact of the parents' role in career selection is open to question. An important perspective is provided by the interviewed families and concluded that while children indicate that their parents are major career influencers, parents believed they have little influence over their children's choices. This paradox might represent poor communication between parents and their children. If this explanation could be confirmed, then we felt confident that we would better understand the role of parents in the enlistment decision and could provide guidance on how the military might influence those decisions.

To address this question, ARI developed and analyzed a database that links the attitudes of young adults to those of their parents. One highlight of this work was the finding that while most children try to follow their parent's advice, they often have inaccurate views of their parent's beliefs and perspectives regarding military service. Our analyses show that a child's initial perceptions of military life often reflect his perceptions of his parents' attitudes, while a decision to enlist reflects both his initial perceptions of his parents' attitudes as well as his parents' actual attitudes. In short, both parental attitudes toward the military and a child's perceptions of his parents' attitudes are important predictors of the enlistment decision.

Recommendations for Today's Recruiting Market.

Our analyses led to four specific recommendations regarding military recruiting. First, it was apparent to us that many children do not have access to a

well-informed parent who can provide accurate information regarding the benefits and disadvantages associated with a military career. We believe that the propensity of these individuals to enlist may be influenced by advertising initiatives featuring a competent well-respected individual acting as a "surrogate" parent and providing positive information regarding military service.

Recruiting Recommendations

- 1. Run advertisements featuring competent well-respected individuals who act as "surrogate" parents and provide positive information regarding the military.*
- 2. Provide parents with information about military service so they can influence their children.*
- 3. Focus recruiting efforts on individuals who think their parents have positive military views.*
- 4. Focus resources on individuals whose parents have positive military views.*

Second, parents need to be aware of the ways in which they may influence their children's career plans. While many parents have the impression that they can not influence their children as regards career choice, our analyses suggest that parents need to be more direct and clear in career-related discussions with their children. We believe that these discussions are especially important when individuals near critical decision windows. Military advertisers may want to target parents with military advertising that informs them of the benefits of military service, especially those benefits that have a direct impact on them such as the Army College Fund or the Montgomery GI Bill.

Third, youth perceptions of parental views toward the military may function as an unconscious

indicator of enlistment propensity, i.e., individuals who state that their parents have high regard for the military are indicating they have positive enlistment propensity.

Furthermore, parental reports of positive attitudes toward the military are associated with eventual enlistment. This association may reflect the more practical understanding and knowledge that parents often have concerning the decisions their children will eventually reach, e.g., parents are usually more aware of the costs of a college education. Parental support for military enlistment probably helps ensure that an individual's interest in the military will result in an enlistment.

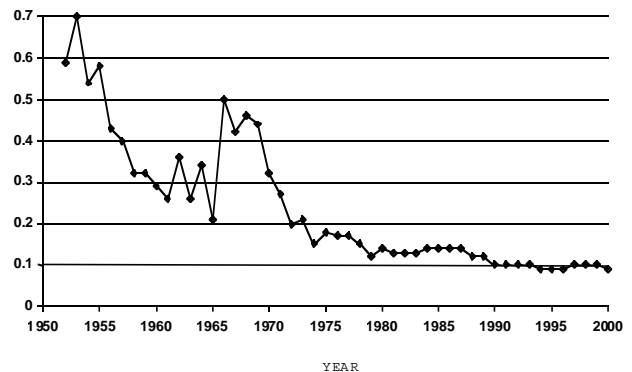
Recruiting for the Army After Next: Interactions with Changing Family Demographics

The above discussion points to the fact that little accurate communication occurs in many families regarding the advantages and disadvantages of military service. Unfortunately for military recruiting, this situation is likely to become worse in coming years because of two long-term demographic trends. Both of these trends will decrease the proportion of youth that has access to a parent who served in the military.

The first trend is implied by Figure 1, which tracks the ratio between active military male accession enlistment requirements and the size of the male 18 year-old youth cohort for the period from 1952 to 1992. Figure 1 documents a tremendous decrease (69 percent) in military accession requirements as a proportion of the male cohort between 1970 and 1990. This trend will result in a lower proportion of tomorrow's young adults having a parent who served in the military.

Another important demographic trend is the evolution of the American family structure. Figure 2 indicates that the proportion of youth reared in nontraditional families has changed markedly over the 30 year period from 1960 to 1990: a much larger proportion of youth is now being reared by a

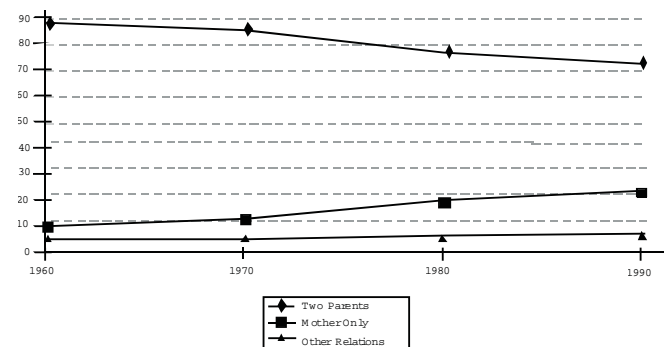
Figure 1. Ratios of Male Military Accession Requirement to Size of Male 18-Year-Old Youth Cohorts by Year.



Source: Population representation in the Military Services (Washington, D.C., Department of Defense, October 1993)

single female parent. This trend means that individuals from nontraditional families, primarily mother-headed households, will comprise an increasingly large share of the military's recruits in future years.

Figure 2. Living Arrangements of Children under 18 Years of Age



Both demographic changes are important in the context of parental-youth communications because they indicate that the military is entering a period during which military service among the parents, and especially among the custodial parents, of American youth will be much less common. It follows that in the future many parents will have less accurate impressions of the modern military lifestyle.

Parents play a vital role in the enlistment process and recruiters need to understand how parental

influence on that process works. Recruiters also need to spend more time educating parents about military life because most of them will have little or no first-hand military experience.

Given the influence of parents on their youth, it is important that military recruiting policies reflect this change and provide parents with positive information regarding military careers. Our analyses show that it is important to enlist the support of parents when recruiting an individual and to inform them of their influential role in their children's future.

For additional information, contact Dr. Peter Legree, ARI-Selection and Assignment Research Unit, DSN 767-0307 or Commercial (703) 617-0307. Legree@ari.army.mil

ARMY FACTS

ARMY FAMILIES¹

“Did you know that...”

- *78.4% of all officers and 63.2% of enlisted personnel (PV2-CSM) are married?*
- *16.5% of officers and 30.6% of enlisted personnel are single and have never been married?*
- *54.0% of the civilian spouses of enlisted personnel (PV2-CSM) are working (either full-time or part-time), 32.8% want to work but don't have a job now, and 13.2% report that they do not want to work now?*
- *49.1 % of the civilian spouses of all officers are working, 24.7% want to work but don't have a job now, and 26.2% report they do not want to work now?*
- *60.6% of all officers and 54.1% of enlisted personnel (PV2-CSM) have a child of any age who is currently dependent on the soldier (for over half of the child's support)?*
- *16.5% of all officers and 9.7% of enlisted personnel (PV2-CSM) have a child 13-18 years old who is currently living with them?*
- *4.2% of enlisted personnel (PV2-CSM) and 2.1 % of all officers report that they are single parents?*

¹Results from the **Fall 1997 Sample Survey of Military Personnel**, conducted by the Army Personnel Survey Office (apso@ari.army.mil).

Force XXI Training Program -- ARI's Role

Warfighter XXI is a major initiative in the Army's strategy to train the force of today and also ensure it is prepared for the battlefields of tomorrow. The goal is to define a training strategy and a training system for individual through joint task force level to support the development of Force XXI technologies and to train the Army of the 21st Century.

A spearhead of Warfighter XXI is the Force XXI Training Program (FXXITP). The FXXITP was first known as the Virtual Brigade Training Program (VBTP). Initiated with congressional funding, it focused on the heavy mounted (armored and mechanized) divisional brigade and the combat support and combat service support (CS/CSS) training audience. The VBTP was subsequently expanded and renamed FXXITP. The expanded mission included the requirement to develop a comprehensive training program that optimizes the use of virtual, constructive, and live training assets that utilize 21st Century technology.

The FXXITP has the following goals: enhance training efficiency through the use of innovative methodologies; increase combat readiness through integrated training management tools; and conduct large scale exercises that integrate the use of emerging technologies.

The development of the FXXITP is based on Army training principles found in FM 25-25 and FM 25-100 and incorporates the work on structured training that has been developed by ARI at Fort Knox. (Virtual Training Program (VTP) -- ARI Spring Newsletter, 1995)

THE ARI ROLE

ARI has been involved in many aspects of the FXXITP development and implementation, from co-authoring the original concept paper on the VBTP in 1993 to executing a major portion of the

battle staff training research. This innovative research program addresses individual staff member, staff group, and complex staff training. Two of the efforts that have been developed by ARI at Ft Knox, through a series of research and development contracts, are described below.

INNOVATIVE TOOLS AND TECHNIQUES FOR BRIGADE AND BELOW STAFF TRAINING (ITTBBST)

The ITTBBST program focuses on the individual and staff group components of the FXXITP. It is comprised of three components that include Battlefield Function Analyses (BFAs), Battle Staff Training System (BSTS) and the Staff Group Trainer (SGT).

Battlefield Functions Analyses (BFAs). Earlier work conducted by ARI's former Presidio of Monterey Research Unit described these products as the Critical Combat Functions (CCF). The 24 original CCFs were focused at Battalion Level.

The CCFs were recently renamed Battlefield Functions (BFs) by the TRADOC leadership who defined BFs as follows: "processes or activities occurring over time that must be performed to accomplish a mission(s) or supporting critical tasks. They provide task integration, combined arms interaction, and inter-Battlefield Operating System (BOS) linkages."

Current BF research is at brigade level and is two-phased. The first phase of the effort includes analyses of the Intelligence, Mobility/Counter-mobility, and Combat Service Support BOSs. This work addresses the requirement in the congressional language that centered on CS/CSS. This is available as "Research Products" on the ARI website under Publications (www.ari.army.mil).

The second phase of the BF work focuses on the interconnectivity of specified command and

control tasks at brigade level, and supporting CS/CSS units. This effort serves as a developmental foundation for the other staff training modules developed under ITTBBS. Analyses have been conducted for the Brigade Combat Team, the Field Artillery Battalion, the Engineer Battalion, and the Forward Support Battalion. These analyses are provided for the following functions: Plan for Combat Operations (BF 18); Direct and Lead during the Preparation Phase of Battle (BF 19); and Direct and Lead Unit in Execution of Battle (BF 20). The effort also includes an analysis of Take Active Air Defense Measures (BF 16) for the Air Defense Artillery Battery.

The ITTBBS effort differs from the original analyses; it adds a User's Guide that provides examples of how different audiences might best utilize the documentation, and it provides an initial look at how to document the information into the Army's Automated Systems Approach to Training.

Battle Staff Training System (BSTS). This component is an enhancement to the research that was conducted at the Infantry Forces Research Unit at Fort Benning by Dr. Thompson in 1993 and 1994. Under the original program 26 staff training modules were developed. The training modules were multimedia, consisting of text and computer-based instruction, to train individual staff members on skills required for the various staff functions at battalion and brigade. Courses encompass a common core for both the battalion and brigade plus 12 battle staff positions for each echelon.

The ITTBBS program built from the IFRU research. New objectives are to: design and develop new modules for battalion and brigade commanders; incorporate the most recent doctrine (e.g. FM 100-5); develop remediation training modules for selected courses; design and develop a comprehensive assessment component for each of the 28 modules; and formatively evaluate all the training modules were the foci of the effort.

The modules were to be designed for use at the unit, or at a learning center so staff members can train at their own pace and according to the training time available to them. This allows staff members

to learn individual skills and staff responsibilities before participating in a collective training exercise.

Staff Group Trainer (SGT). The SGT links the staff skills developed in BSTS with available battalion and brigade-level staff training in a Janus or Battalion and Brigade Simulation (BBS) environment.

The SGT is an innovative tool for training battalion and brigade staff groups and command post staffs. Growing out of ARI research aimed at training warfighters to process battlefield information, the SGT is a UNIX-based network of workstations that supports training of information management skills.

The SGT development provides battalion and brigade staff with an incremental learning exercise for movement to contact, deliberate attack, and defense in sector missions on the National Training Center (NTC) terrain data base. The SGT emphasizes staff drills, Command Post tasks, Commander-Command Post interaction, and control of unit operations. Units participating in the SGT receive feedback examining staff functions within a time and accuracy criterion, but also subjective Observer/Controller feedback examining the critically important dynamic of interaction that leads to command post synergy.

COMBINED ARMS TRAINING AT BRIGADE LEVEL REALISTICALLY ACHIEVED THROUGH SIMULATIONS (COBRAS)

The COBRAS effort set the foundation for work under the FXXITP. The effort was designed to meet the challenges stated in the congressional language as well as provide an opportunity for growth in the future.

The COBRAS effort is comprised of Brigade Staff Exercises and Brigade Staff Vignettes. The components provide training in integration and synchronization process skills.

The **BDE Staff Exercise (BSE)** is designed to provide command and control training to the commander and selected members of his staff. It is a structured, simulation-based, scenario-embedded program that requires integration and synchronization among the members of the training audience. The scenario that drives this exercise includes movement

to contact, area defense, and deliberate attack missions. All phases of these missions are included—planning, preparation, and execution (includes consolidation and reorganization), with simultaneous planning for the next mission. The missions are designed for the NTC database. The simulation chosen for the BSE is the (BBS).

The **Staff Vignettes** are based on a small group training approach and provide command and control training to selected groups of the Bde Staff. The vignettes are 24 short, self-contained training activities that focus on specific staff process events and on selected members and groupings of the staff. They are structured training events in that they provide all the necessary components to implement and conduct meaningful training. Each vignette is designed to provide practice and feedback on explicit objectives and tasks. The training support package for a vignette defines the objectives, outcomes, and limits of the training experience. The structure also includes the tactical scenario that provides the framework for the required activities.

These vignettes referred to as 'Thursday morning staff training' were designed for independent use, allowing the unit to conduct any or all of the vignettes, in any order. The vignettes include 'live' as well as constructive simulations. Structured feedback and participatory AARs are features of the vignettes.

The COBRAS program has undergone several evaluations. It was piloted in December 1995, at Fort Knox with an ad hoc staff, formatively evaluated in August 1996 by the 1st Brigade, 1st Infantry Division. The BSE was also used at Fort Lewis by the 3d Brigade, 2nd Infantry Division in December 1996 and May 1997. The commander incorporated the COBRAS training into his strategy to prepare for his NTC rotation.

Conclusion

The FXXITP provides an opportunity to develop staff training using new approaches to training. Research with prototypes such as BSTS

and COBRAS continues at Fort Knox. ARI is currently involved in planning follow-on efforts with the FXXITP. Future work includes multi-echelon-structured training and the use of STOW technology.

For additional information, contact Dr. Kathy Quinkert, ARI-Armored Forces Research Unit, DSN 464-6928 or commercial (502) 624-6928. quinkert@ftknoxari-emh15.army.mil.



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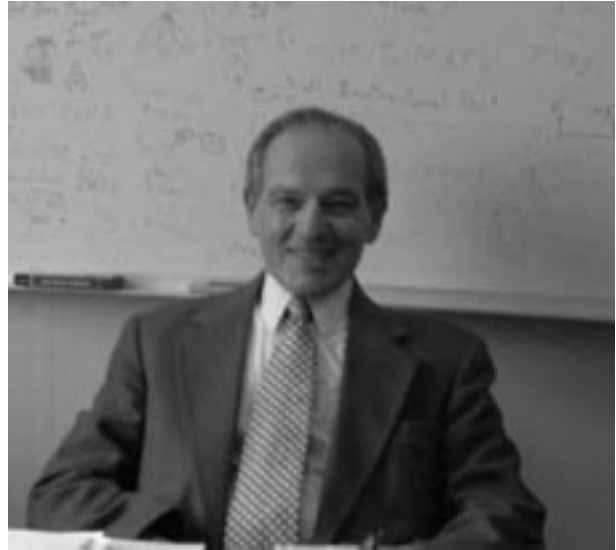
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Fifteen Years, retired, and still working!

Dr. Robert J. Seidel was recently appointed as the first ARI *Research Unit Chief, Emeritus*. He has served the U.S. Army Research Institute for the Behavioral and Social Sciences in senior positions for the last 15 years. Upon his retirement, Dr. Seidel plans to complete a book with the participation of two colleagues, Dr. Ok-Choon Park, of the Department of Education, and Ms. Kathy Cox, of the Consortium of Universities.



Dr. Robert J. Seidel, Research Unit Chief, Emeritus

Dr. Seidel describes his publication as a type of "cookbook for instructional designers and training developers". Its purpose is to relate theory-based principles of learning to instructional strategies.

Dr. Seidel and his colleagues will draw upon principles from various theories that are most appropriately applied to particular types of instructional tasks.

For additional information, contact Dr. Robert J. Seidel, ARI, DSN 767-8838, Commercial (703) 617-8838. Seidel@ari.army.mil



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Dr. Edgar Johnson
Director

Dr. Harold Wagner
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U.S. Army Research Institute
5001 Eisenhower Avenue (6N50)
Alexandria, Virginia 22333-5600

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U.S. Army Research Institute for the Behavioral and Social Sciences
Telephone Directory

Director

Dr. Edgar M. Johnson 617-8638

Armored Forces Research Unit (Ft. Knox)

Dr. Barbara A. Black DSN 464-3450

Technical Director

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